Policy Brief 2 | Transport and Mobility Services

Beyond Car Growth

Digital van service as alternative to private car use in Addis Ababa

A Policy Brief by the Addis Ababa Urban Age Task Force | July 2022

Key messages

● The vast majority of people in Addis Ababa walk or use public transport to get around. As the city's built-up area has more than quadrupled in recent decades, however, residents have needed to travel ever-longer distances, and that has led them to rely more and more on motorised transport including taxis and private vehicles.

● Due to high import duties, cars in Ethiopia are very expensive, mostly old and in poor condition, which has implications for safety and air quality. Still, the number of cars on the roads has grown rapidly — and more than half the 1.1 million vehicles in Ethiopia as of 2019 were registered in Addis Ababa.

● The key to slowing that growth is to provide a viable alternative for people who can afford to buy a car (or to regularly hire taxis, which also congest the roads). An option that could fill that niche is a digital van service, as already offered in several cities around the world. Case studies in Kenya, India, Finland and Germany show these services can be attractive to private car users, but there are trade-offs between convenience and cost-effectiveness, and several regulatory issues have arisen as well.

● A scoping survey conducted for the Task Force in early 2020 found two-thirds of existing car owners and almost half of aspiring car owners who responded would be willing to try a digital van service for at least some of their travel needs. The survey found considerable dissatisfaction with existing public and private options, and thus demand for a reliable, eco-friendly, flexible and cost-effective alternative.

● If Addis Ababa wants to make the most of a digital van service, it is crucial to integrate its development with broader mobility improvements in the city. Through careful route selection, data-sharing, and the development of multimodal transport hubs, digital van services could be used to complement and extend the reach of public transport, making it easier to avoid driving.

● Public policy also has a key role to play in incentivising the use of digital vans, such as through congestion pricing. Cancelling planned parking structures and imposing parking fees could also help. Existing requirements for off-street parking should be lifted, and instead, developers should be encouraged to offer free or subsidised public transport, including digital van service.

Addis Ababa Urban Age Task Force

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The Task Force is a partnership between the Addis Ababa City Administration Plan & Development Commission (AAPDCo), LSE Cities at the London School of Economics and Political Science, the Alfred Herrhausen Gesellschaft and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

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1. Context

Addis Ababa is a fast-growing city. Its population — 3.7 million as of 2018, by official estimates[1] — is increasing by about 3.8% per year,[2] driven by migration from rural areas. Abuzz with construction and urban redevelopment projects, Addis Ababa is also expanding physically. Its built-up area more than quadrupled from 1984 to 2014, from 80 to 341 km[2]; from 2003 to 2014 alone, it grew by 78%.[3]

For the people who live and work in Addis Ababa, the expansion of the urban footprint has created significant mobility challenges. Some — mainly the poorest — still live in very densely settled areas in the city's core and walk anywhere they need to go; by the latest estimate, 54% of trips in Addis Ababa were completed on foot.[4] Yet in recent years, new housing has been built mainly on the city's edges, often far from jobs and vital services and amenities. Walking is thus no longer an option for many trips, and public transport, used for about 31% of trips in the city, is widely recognised as inadequate.

The City of Addis Ababa and the Ethiopian government are actively working to improve public transport as well as infrastructure for pedestrians, who face dangerous conditions on most of the city's roads and are disproportionately affected by road crashes. However, those who can afford to travel by car increasingly do — either driving their own, or using taxis, including from digital ride-hailing services such as Ride, Feres and ZeyRide, Ethiopia's versions of Uber.

As a result, the number of vehicles has been rising rapidly. As of mid-2019, a total of 596,084 vehicles were reportedly registered in Addis Ababa,[5] an almost 40% jump from the 426,500 reported in 2015.[6] More than half the 1.1 million vehicles registered in Ethiopia were in Addis Ababa, and the country imported 135,457 vehicles in fiscal 2019 alone.[7] High import duties make cars very expensive, so most vehicles are old and in poor condition,[8] and thus less fuel-efficient, more polluting and less safe than newer cars.[9]

Addis Ababa and Ethiopia still have very low motorisation rates by global standards,[10] and during the COVID-19 pandemic, car imports have plummeted.[11] Still, the long-term trend is clear, especially with car ownership so concentrated in Addis Ababa: ever-more congested roads, with implications for economic productivity, the environment, and human well-being.[12]

Addis Ababa urgently needs new transport solutions that enable people to move efficiently across the city without driving or hiring private cars. This briefing paper, based on research conducted by Ethiopian and international experts for the Addis Ababa Urban Age Task Force, explores one option: a van service that can be hailed digitally, like the newer taxi services, but is less costly and more efficient and eco-friendly.

After providing an overview of Addis Ababa's current transport services, the paper describes some of the digital van services that have been offered around the world. It then presents the results of a scoping survey that found significant potential demand for such a service in Addis Ababa. A final section discusses considerations for the design of a digital van service, based on conditions in the city.
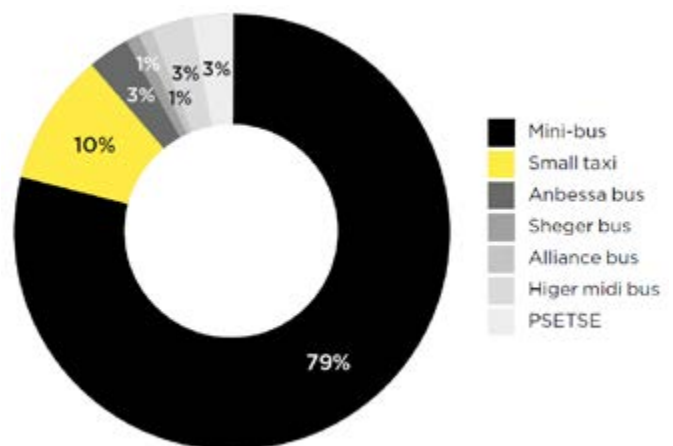
2. Mobility options in Addis Ababa today

The expansion of Addis Ababa's urban footprint has made improving transport infrastructure a top priority in the city, including through a new light rail transit (LRT) system, a planned bus rapid transit line (BRT), a new non-motorised transport strategy, and a US$300 million project with multiple components financed by the World Bank.[13] All this means that people in Addis Ababa have a growing range of travel options, but public transport is still very limited.

As shown in Figure 1, by far the most widely used mode of public transport is minibus taxis, accounting for almost 80% of trips (excluding LRT).[14] The minibuses, which have regular routes, can seat about 15 people each and cost about 1.5–6 Birr per trip, depending on the distance travelled. Thirteen private companies operate about 9,000 minibuses across the city.

In addition, more than 400 mid-size Higer buses ("midibuses") operate on 37 routes across Addis Ababa, mainly on major roads, with about 700,000 passenger-trips per day.[16] The City itself runs two bus services: the Anbessa City Bus Service Enterprise, with almost 700 buses and more than 300,000 passenger-trips per day, priced at just 1.60 Birr for trips up to 10 km,[17] and the Public Service Transport Enterprise, which government employees can ride to and from work free of charge, and the general public can pay to use during off-peak hours. Finally, there is the more comfortable, air-conditioned Sheger Express bus service, with more than 200 buses providing about 198,000 passenger-trips per day.

Figure 1. Composition of public transport trips (excluding LRT), 2019.[15]

Legend:
- Mini-bus
- Small taxi
- Anbessa bus
- Sheger bus
- Alliance bus
- Higer midi bus
- PSETSE

79%, 10%, 3%, 1%, 1%, 3%, 3%

Figure 2. Key transport options in Addis Ababa. Left: minibus taxis; middle: Anbessa buses; right: LRT.

Figure 3. Minibus taxi (left) and Anbessa bus (right) routes relative to the distribution of housing in Addis Ababa.

The LRT, launched in 2015, spans 34 km on two lines, one east–west and one north–south. The trains currently provide more than 120,000 passenger-trips per day, with the greatest ridership on the north–south line. The fares are 2 Birr for trips up to 4 km, 4 Birr for 4–6 km, and 6 Birr for longer trips.

Finally, the City has been developing a BRT network since 2015, with 15 potential lines identified across the city. Construction on the first two corridors began in 2021 and was expected to take two years, with additional lines to be built within a decade.[18] The first BRT route alone is expected to serve an initial volume of 5,400 passengers per hour in each direction.[19] The social and economic impacts are expected to be considerable, as the corridor passes through a low-income, densely populated area.

Despite efforts to improve public transport, the services available in Addis Ababa fall far short of local residents' needs. There are long queues during peak hours, buses are crowded, many bus stops lack adequate weather protection and lighting, network coverage is inadequate, many vehicles are of poor quality and uncomfortable, there is too little attention to last-mile connectivity, and land use and housing development policies have not been properly integrated with transport planning. Figure 3 shows the minibus and Anbessa networks overlaid with housing, highlighting significant coverage gaps.

Recognising the urgency of the situation, the City has reportedly rushed to expand the bus fleet, with plans to import some 3,000 buses within two years.[20] Still, given the limitations of existing public transport offerings, it is not surprising that private cars are the most attractive choice for those who can afford them. A carefully designed, well-managed digital van service tailored to that demographic could thus fill a critical gap and potentially help to slow the proliferation of private cars.

3. Digital van services around the world

The Urban Age Task Force examined four examples of digital van services: the Kutsuplus system set up by the public transport authority in Helsinki, Finland; private bus aggregators in India; the private aggregator Swvl in Nairobi, Kenya; and MOIA, a private digital van service operated in partnership with the public transport operator in Hamburg, Germany.

Public model: Kutsuplus, Helsinki

Launched in late 2012, Helsinki's Kutsuplus was one of the world's first fully automated, demand-responsive public transport systems, developed by the Helsinki Regional Transport Authority.[21] Riders used their smartphones to book rides, sharing nine-seat vans with others going in roughly the same direction (however, a study found that in more than 90% of cases, the vans had only one or two passengers, so the average occupancy rate was just 14.1%).[22] The fares were subsidised, higher than for public transport, but lower than for taxis. The service was available within about a 9 km radius of the city centre.

By 2015, Kutsuplus had more than 32,000 registered users, more than half of whom owned at least one car, but still liked the vans for their convenience. However, the small fleet size resulted in long passenger wait times. Sharing rides also meant longer journeys. Given the high cost of subsidies, the government ended operations in late 2015, with the aim of possibly developing a new service in the future.

Private model: Bus aggregators in India

Several bus and van aggregator start-ups have emerged in India in recent years, offering an alternative to crowded, uncomfortable public transit or driving. Rather than owning bus fleets, they are typically intermediaries, enabling people to use apps to book seats on buses along fixed routes. In 2015 alone, more than a dozen companies launched bus aggregation services in Indian cities.[23]

The bus aggregator Cityflo bills itself as a premium bus service for corporate professionals, used by more than 8,000 people every day to travel to and from 11 business hubs in Mumbai — and now six in the New Delhi region as well.[24] Another service, ZipGo, which operated in a half-dozen major Indian cities and raised tens of millions of dollars in capital, shut down in 2019.[25]

Shuttl, which attracted US$120 million in equity capital, touts itself as a stress-free way to commute — and a good option for women, who often do not feel safe on public transport.[26] A 2020 study found that in the Delhi area alone, Shuttl avoided about 14,000 tonnes of CO_2 emissions per year.[27] Shuttl grew to provide about 100,000 rides daily on 2,000 buses in several major Indian cities as well as in Bangkok, but was devastated by the pandemic.[28] It survived by selling itself to Chalo, which runs an app for tracking buses and buying digital bus tickets.

Bus aggregators in India have encountered some regulatory challenges, as they typically operate under "contract carriage" licenses under the Motor Vehicle Act, which only allows them to carry passengers between a defined origin and destination, without stops. In several cities, bus aggregators have been perceived as direct competitors to city buses, and thus faced opposition. However, the 2020 study of Shuttl found that 51% of users in Delhi had switched from driving, not buses – though 29% had switched from riding the metro.[29] Because bus aggregators offer a different type of service and target more affluent users, however, they do not compete with public buses.

Private model: Swvl, Nairobi

Swvl is a Cairo-based digital bus aggregator with operations in Egypt, Kenya, Brazil and Pakistan. In Nairobi, it operates an app-based service on fixed routes and schedules, using vans and small shuttle buses.[30] Prior to the pandemic, the company reported some 500,000 boardings per month and said some of its passengers owned cars.[31]

Swvl fares in Nairobi are about US$2–3, higher than for the widely used matatus (privately run, informal minibuses), but lower than for app-based taxi services. The fares are collected in cash or through a mobile-based payment service known as M-Pesa. Riders can track the buses on their app and request a pick-up at the nearest stop. However, if passengers are not available, drivers sometimes spend a lot of time searching for new customers and are not able to adhere to the assigned schedule.

The company partners with vehicle owners, who employ the drivers and are paid based on the number of trips completed by each vehicle. Swvl sets standards for the vehicles, including an import date cut-off (a proxy for the age of the vehicle) and license requirements.

The platform has faced regulatory uncertainty and opposition from some in the matatu industry. Swvl and another operator were temporarily suspended by Kenya's National Transport and Safety Authority in November 2019 for failing to comply with a requirement that public transport operators join cooperatives known as "saccos". Swvl now partners with vehicle owners who are already part of registered saccos. This has enabled Swvl to access regular public transport stops and terminals.

Hybrid model: MOIA, Hamburg

MOIA is a "ridepooling" service launched in Hanover, Germany, by the Volkswagen Group in July 2018. In April 2019, MOIA launched what it called "the largest all-electric ride-sharing service in Europe" in Hamburg,[32] with the support of Hamburger Hochbahn, which operates the city's metro system and many of its buses.

MOIA in Hamburg started with 100 vans, with a plan to expand to 500 vans within a year (service has been suspended for some periods due to pandemic restrictions, however). Users can book their rides on an app, selecting a virtual stop for pickup and another for dropoff. The fares are

dynamic, ranging from €5 to €10 depending on distance, time of day and other factors. Hamburger Hochbahn sees MOIA as part of a larger effort, called "Switch", to increase public transport ridership by expanding users' transport options.

A survey of more than 11,000 MOIA users in Hamburg found that 72% had access to at least one car in their household, and 73% used multiple modes of transport per week, including private cars.[33] Only 9% of users based in Hamburg reported using it at least once per week, however, while almost half used it one to three times per month, and the rest, even less. (Another analysis found the vans had no passengers on 40% of trips.) Still, the survey-based study concluded that MOIA "is an attractive option for transportation users with high car usage and ownership rates".

4. Insights and challenges for Addis Ababa

The case studies show that digital van or bus services can be successful, and high-quality services can even persuade car owners to rideshare for at least some trips. There are trade-offs between flexibility and cost-effectiveness, however: Services on fixed routes are more efficient but less convenient, while those with flexible pickup and dropoff options have much higher operating costs and tend to underuse vehicles.

Another issue highlighted by the case studies is competition with other public transport providers — real and perceived. Partnering with a public transport authority, and perhaps piloting digital van services around LRT or BRT lines in particular, can help ensure that the vans complement existing public transport systems, not undermine them. Collaboration could also facilitate data-sharing and enable the government to optimise the city's overall transport system.

The case studies also show that existing legal frameworks are often inadequate for guiding the regulation of digital van and bus aggregators, and this can limit options and lead to conflicts. Addis Ababa has no "ridepooling" or bus aggregation services yet, but regulatory issues with digital taxi services. There are as many as 20 such companies in the city – from Ride, by far the largest, with more than 10,000 vehicles; to ZeyRide, with about 5,000 vehicles; to smaller companies with a few hundred vehicles, including the all-female Seregela. Most operators accept bookings through both an app and a call centre. Some taxi companies in Addis Ababa are service aggregators, while others operate their own fleets.

After digital taxi aggregation services were introduced in December 2016, the Addis Ababa Transport Authority (AATA) directed them to register as transport providers and to ensure that all of their vehicles had public service license plates. The companies sued, arguing that they are technology providers, taxed accordingly, and not subject to regulation by the AATA. The agency counters that it has full right and responsibility to regulate any transport-related services. Several lawsuits are still pending in court.

Along with unresolved regulatory issues, there are technical hurdles to overcome in expanding app-based services. First of all, smartphone use is still limited; taxi aggregators in Addis Ababa receive many of their requests through call centres. More widespread use of apps would reduce operating costs. However, limited internet connectivity in the city could hinder online bookings and restrict the extent to which digital van services can respond to changes in demand patterns in real time.

Enabling electronic payments is another key task. Most users of digital taxi services in Addis Ababa pay in cash, but on higher-capacity minibus services, accepting cash payments would require extra staffing. Operators could explore the use of an electronic wallet system where customers could load money to pay for multiple rides, or adopt an existing online payment system, as in Nairobi. Finally, requirements for off-street parking should be lifted in cases where developers offer free or subsidised public transport, including digital van service.

5. Is there demand for a digital van service?

The case studies suggest that, given the costs and technological demands, a digital van service in Addis Ababa might be likeliest to succeed if it targeted relatively affluent people who can afford cars, but could choose to drive less, not purchase a vehicle, or ridepool instead of taking a taxi. This is only a fraction of the city's population, but a critical one if Addis Ababa wants to slow the growth of private car use.

In order to understand current attitudes towards different transport modes, the Task Force conducted a scoping survey in January–April 2020,[34] with 134 respondents who were either car owners or planning to purchase a car. The goal was to establish a survey platform that could be scaled up at a later point to inform the design of a potential digital van service pilot.

Respondents were asked which modes of transport they use most every day; 50% said private; 13% said minibuses. Public taxis were widely used, but digital taxis, significantly less so. None of the respondents used the LRT most, perhaps reflecting its limited range. Asked which mode they prefer, 43% identified private cars, followed by digital taxis and city buses (Figure 4).

Given a list of reasons why they might like to use private cars, both current and prospective car owners agreed most with the statement "I can reach destinations that are most important to me by car," suggesting that greater mobility is a key factor. Safety from harassment and crime and not having to wait long for public transport were the two other top reasons chosen.

Figure 4. Modes of transport used and preferred by survey respondents.

Which method of transportation do you use to complete <u>most of your daily travel?</u>
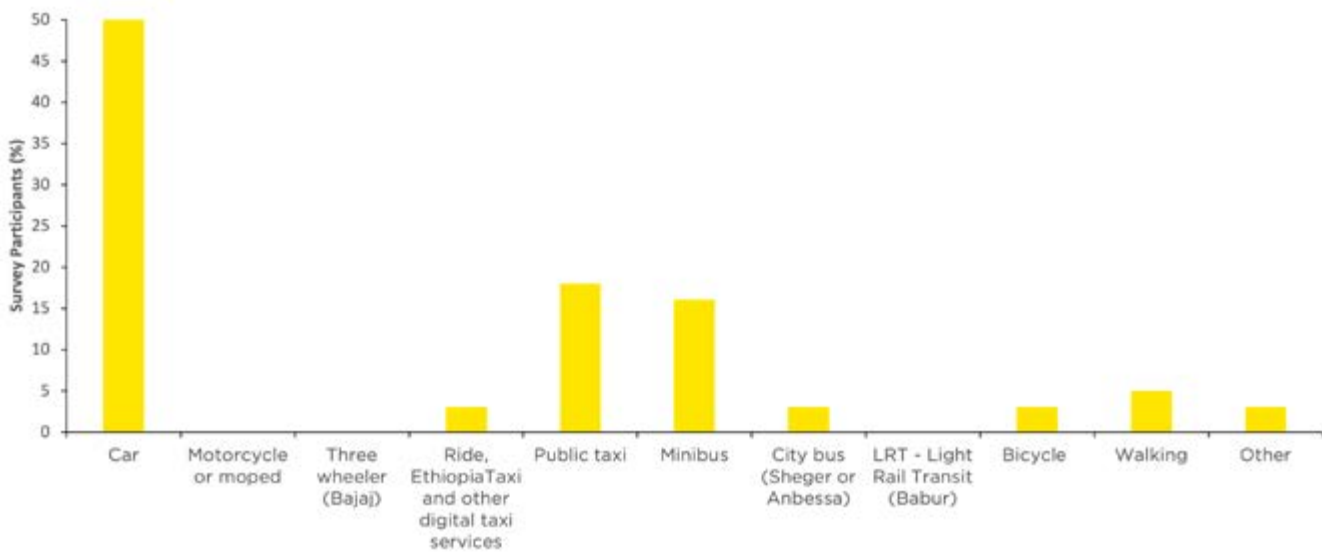
Which of the following methods of transportation do you personally <u>prefer</u> to use in Addis Ababa?
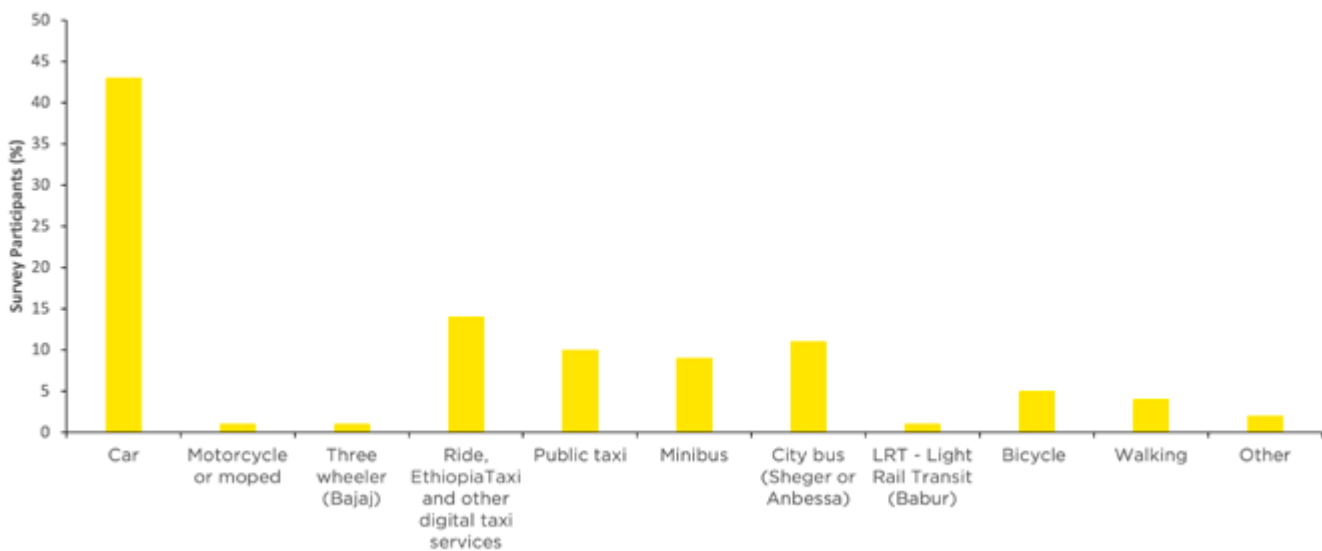
The statement respondents disagreed with most was "It is important to me that I do not have to share my car with anybody." This suggests that privacy or disinterest in sharing rides is not a major motivation.

Conversely, when asked about buses, the most agreed-upon statements were that they are cheaper than driving, that the wait times are long, and that they are more environmentally friendly. On the LRT, respondents agreed most with statements about the low costs and environmental benefits, and with the statement "I would be very limited if I travelled only by LRT." With both buses and LRT, the most disagreed-upon statement was "I can organise my day flexibly" when using the service.

Minibuses, meanwhile, were perceived as cheaper than

driving while also enabling users to reach the destinations that are important to them. With regard to taxis, the most agreed-upon statements were that they enable users to reach all important destinations; that they are flexible; and that they give users time to do something else while travelling.

Asked specifically whether they digital vans and ridesharing "may be something I could enjoy", 69% of respondents agreed; 60% also believed that it "may be easy for me". Asked specifically whether they would be willing to try a digital van service, 65% of car owners and 47% of non-owners said yes (Figure 5). This suggests that non-car owners maintain an idealised view of car ownership, while car owners may be more cognisant of the costs and inconveniences, and thus more open to a new option.
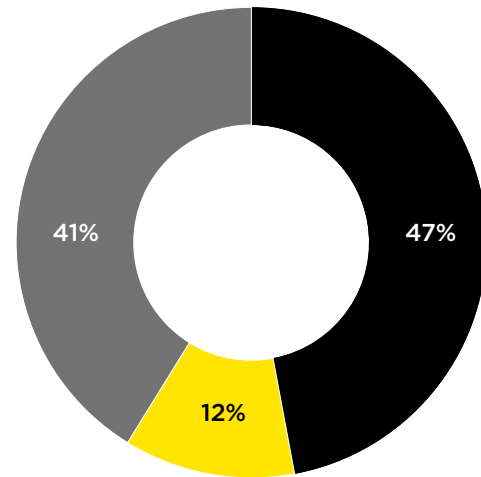
Figure 5. Car owners' and non-owners' willingness to try a digital van service.　　■ Yes ■ No ■ Maybe

Car Owners

32%

3%

65%

Non-Car Owners

41%

47%

12%
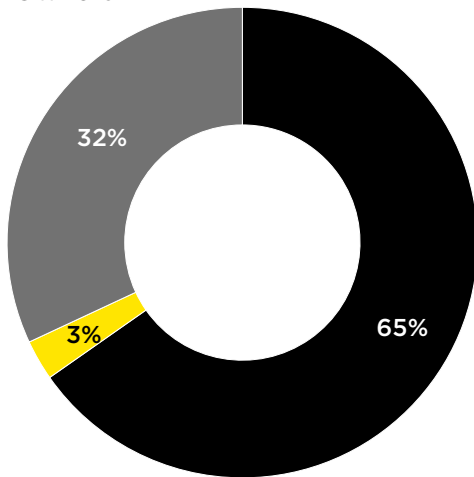
Given the potential cost of a digital van service, users' willingness to pay is a key factor. Asked what share of their net income they would be willing to spend on transport, car owners were generally more open to spending a larger share than non-owners, though large shares of both chose "up to 5%" or "5–10%". Asked whether they would sell their cars if a digital van service were available, most car owners said no, instead suggesting they would use the service for specific trips, while maintaining the ability to drive when travelling with elders or children or to areas within or outside Addis Ababa that are not served by other transport modes. All this is consistent with usage patterns seen in the case studies.

A final key consideration is whether potential digital van service users have the technologies they would need: 98% of the respondents owned a smart device, but among them, only 49% used mobile data. Notably, although the survey indicated that very few respondents use digital taxis as their main means of transport, 70% expressed interest in using existing services, such as Ride, and future offerings. The survey also showed interest in environmentally friendly transport options.

6. Envisioning a digital van service for Addis Ababa

Road congestion, air pollution and traffic crashes are daily occurrences in Addis Ababa, and the rapid proliferation of private cars is exacerbating those problems. In response, the City has taken several steps to improve public transport service. The Task Force's initial analysis suggests that a digital van service could be a valuable part of those efforts and reduce the perceived need to drive or take taxis.

In particular, a system of demand-responsive vans hailed with an app could extend the reach of the public transport system and enable people to travel safely and comfortably to their destinations without driving. The dramatic growth in digital taxi services in recent years shows demand is

there; however, these taxis typically carry only individual passengers, and they are increasing congestion. A digital van system would be more efficient, while still offering a high-quality service that attracts private car users.

An analysis for the Task Force identified several basic principles the government should consider when managing digital van service in Addis Ababa.[35] First and foremost, it is crucial to integrate the development of digital van services with broader mobility improvements in the city. Through careful route selection, data-sharing, and the development of shared facilities, digital van services could be used to extend the reach of public transport — so, for instance, LRT riders could hail a van from the station to their homes, and people who currently have no easy bus or LRT access can use the vans instead. Integrating payments systems and including digital vans in public transport trip planning apps would also help. The goal is to ensure that digital vans can be used seamlessly with other public transport modes.

Public policy should also incentivise the use of larger and high-occupancy vehicles, such as through congestion pricing, and also consider incentives for the use of cleaner, more fuel-efficient, or even electric vehicles. Parking fees and the replacement of parking structures with public transport hubs could also help. Existing requirements for off-street parking should be lifted, and instead, developers should be encouraged to offer free or subsidised public transport, including digital van service.

It is also crucial to ensure passenger safety, with transparent incident reporting systems. In addition, high emissions standards should be set for the vans – Euro 3 or better – and electric vans should be considered, as they would further reduce greenhouse gas emissions and air pollution.

Digital ridepooling and bus aggregation services are emerging in many cities around the world, including in Africa. Rather than waiting for the market to bring them to Addis Ababa, the City has a chance to actively design a service that meets local needs and complements existing options.

Endnotes

1 Addis Ababa Resilience Project Office, 2021, "Addis Ababa Resilience Strategy."

2 The official estimate is widely viewed as conservative; by UN estimates, Addis Ababa had about 4.8 million residents as of 2020 and is expected to reach 8.9 million by 2035. See UN DESA, 2018, "World Urbanization Prospects 2018."

3 Zewdie, Worku, and Bantider, 2018, "Temporal Dynamics of the Driving Factors of Urban Landscape Change of Addis Ababa During the Past Three Decades," *Environmental Management*.

4 See World Bank, 2016, "Ethiopia – Transport Systems Improvement Project"; Addis Ababa City Administration, 2018, "Addis Ababa Non-Motorised Transport Strategy 2019–2028." The World Bank report, cited in the City strategy, refers to a 2011 study, suggesting that all its data may come from that study. Given how much Addis has changed in the past decade – from the location of housing, to transport infrastructure (as discussed below, an entirely new light rail system opened in 2015), to a massive increase in private vehicle registrations, those estimates may no longer reflect the modal shares in Addis Ababa today.

5 New Business Ethiopia, 2019, "Ethiopia Imports 135,457 Vehicles in a Year." The fiscal year ended on 7 July 2019.

6 World Bank, 2016, "Ethiopia – Transport Systems Improvement Project."

7 New Business Ethiopia, 2019, "Ethiopia Imports 135,457 Vehicles in a Year." This represents a 29% increase over fiscal 2018.

8 Deloitte, 2019, "Invest in Ethiopia: Structural Reforms Set to Unlock East Africa's Largest Economy." Many used cars sold in Ethiopia are 10 years old or more, well above the global average of four years.

9 Ethiopia has a high and steadily rising road fatality rate, with 28.16 deaths per 100,000 people in 2019; see World Health Organization data: https://www.who.int/data/gho/data/indicators/indicator-details/GHO/estimated-road-traffic-death-rate-(per-100-000-population. The high rate is particularly notable given the country's low motorisation rate.

10 A Deloitte analysis using 2014 data found that Ethiopia's motorisation rate was 2 vehicles per 1,000 residents, compared with 20 in Nigeria, 28 in Kenya, 44 across Africa, and a global average of 180 per 1,000; see Deloitte, 2018, "Navigating the African Automotive Sector: Ethiopia, Kenya and Nigeria." As noted, the number of vehicles has risen significantly in recent years. Based on the figures cited above and official population estimates, the motorisation rate for Ethiopia would now be 10–11 vehicles per 1,000 residents, and for Addis Ababa, about 155–160 per 1,000. However, both of these are likely overestimates, as official population counts are widely seen as conservative. For reference, Ethiopian Statistics Service population estimates put the population of Addis Ababa at 3.8 million as of July 2021, and of Ethiopia as a whole, at 103 million; see https://www.statsethiopia.gov.et/population-projection/.

11 APANEWS, 2021, "Number of Imported Cars in Ethiopia Slashed by Ten-Fold: Ministry of Trade," Agence de Presse Africaine.

12 World Bank, 2016, "Ethiopia – Transport Systems Improvement Project."

13 See https://projects.worldbank.org/en/projects-operations/project-detail/P151819 and the project appraisal document: World Bank, 2016, "Ethiopia – Transport Systems Improvement Project."
The World Bank-funded project included the development of a master plan for the development of transport systems in the city to 2030, led by the Addis Ababa Transport Bureau with support from Ramboll Denmark. See https://www.aatdp.com.

14 Data from Addis Ababa Transport Bureau, 2019. See Kost and Aberra, 2022, "Digital Van Service for Addis Ababa: understanding the transport landscape and the potential for digital bus aggregation in Ethiopia's capital."

15 Data from Addis Ababa Transport Bureau, 2019. See Kost and Aberra, 2022, "Digital Van Service for Addis Ababa: understanding the transport landscape and the potential for digital bus aggregation in Ethiopia's capital."

16 For more detailed data and references, see Kost and Aberra, 2022, "Digital Van Service for Addis Ababa: understanding the transport landscape and the potential for digital bus aggregation in Ethiopia's capital."

17 The fares for longer distances are higher, but still modest: 3.75 Birr for 18.1–20 km, and 9 Birr for 40.1–50 km. For a detailed fare schedule, see Table 5 in Kost and Aberra, 2022, "Digital Van Service for Addis Ababa: understanding the transport landscape and the potential for digital bus aggregation in Ethiopia's capital."

18 Belachew, 2021, "Ethiopia: Addis Building 3.8 Bln. Birr Worth Brt Lanes," *The Ethiopian Herald*. See also https://www.afd.fr/en/carte-des-projets/first-bus-rapid-transit-lane-addis-ababa.

19 See more detailed discussion in Kost and Aberra, 2022, "Digital Van Service for Addis Ababa: understanding the transport landscape and the potential for digital bus aggregation in Ethiopia's capital."

20 Belachew, 2021, "Ethiopia: Addis Building 3.8 Bln. Birr Worth Brt Lanes," *The Ethiopian Herald*.

21 This section is based on the overview in Kost and Aberra, 2021, "Digital Van Service for Addis Ababa: Operationalising Digital Bus Aggregation in Ethiopia's Capital." A key source for the latter, an in-depth analysis of the Kutsuplus pilot, is Haglund et al., 2019, "Where Did Kutsuplus Drive Us? Ex Post Evaluation of on-Demand Micro-Transit Pilot in the Helsinki Capital Region," *Research in Transportation Business & Management*.

22 Haglund et al., 2019, "Where Did Kutsuplus Drive Us? Ex Post Evaluation of on-Demand Micro-Transit Pilot in the Helsinki Capital Region," *Research in Transportation Business & Management*.

23 Chadha, Shetty, and Shastry, 2020, *Understanding the Impact of Bus Aggregators on Urban Mobility in India's National Capital Region*.

24 See https://www.cityflo.com.

25 S.H, 2019, "Essel Group-Backed ZipGo Said to Have Suspended Services," Mint.

26 See https://ride.shuttl.com.

27 Chadha, Shetty, and Shastry, 2020, *Understanding the Impact of Bus Aggregators on Urban Mobility in India's National Capital Region*.

28 Mishra, 2021, "Chalo Acquires Office Bus Service Shuttl," *The Economic Times*; Singh, 2021, "India's Chalo Acquires Amazon-Backed Bus Aggregator Shuttl," *TechCrunch* (blog).

29 Chadha, Shetty, and Shastry, 2020, *Understanding the Impact of Bus Aggregators on Urban Mobility in India's National Capital Region*.

30 See https://swvl.com/travel/en-ke. For the full case study, see Kost and Aberra, 2021, "Digital Van Service for Addis Ababa: Operationalising Digital Bus Aggregation in Ethiopia's Capital."

31 The pandemic forced Swvl to temporarily change its business model, shifting to longer-distance trips, but in early 2021, it resumed its service for commuters. See Business Daily Africa, 2021, "Swvl Resumes Mass Transit Routes in Nairobi."

32 MOIA, 2019, "MOIA Launches Europe's Largest Electric Ridesharing Service in Hamburg," News Center.

33 Kostorz, Fraedrich, and Kagerbauer, 2021, "Usage and User Characteristics—Insights from MOIA, Europe's Largest Ridepooling Service," *Sustainability 2021, 13, 958. https://doi.org/10.3390/su13020958*

34 Rode et al., 2021, "Digital Van Service Demand: gauging interest in mobility alternatives among current and aspiring car owners in Addis Ababa."

35 For a detailed discussion, see Section 5 of Kost and Aberra, 2022, "Digital Van Service for Addis Ababa: understanding the transport landscape and the potential for digital bus aggregation in Ethiopia's capital."

References

Addis Ababa City Administration, 2018. *Addis Ababa Non-Motorised Transport Strategy 2019–2028*. Road and Transport Bureau, Addis Ababa. Available at: https://africa.itdp.org/publication/addis-ababa-non-motorised-transport-strategy-2019-2028/.

Addis Ababa Resilience Project Office, 2021. *Addis Ababa Resilience Strategy*. Addis Ababa. Available at: https://resilientaddis.org/wp-content/uploads/2020/06/addis-ababa-resilience-strategy-ENG.pdf.

APANEWS, 2021. Number of imported cars in Ethiopia slashed by ten-fold: Ministry of Trade. *Agence de Presse Africaine*, 1 March. Available at: http://www.apanews.net/en/news/number-of-imported-cars-in-ethiopia-slashed-by-ten-fold-ministry-of-trade.

Belachew, M., 2021. Ethiopia: Addis Building 3.8 Bln. Birr Worth Brt Lanes. *The Ethiopian Herald*, 29 June. News. Addis Ababa. Available at: https://allafrica.com/stories/202106290710.html.

Business Daily Africa, 2021. Swvl resumes mass transit routes in Nairobi. 9 March. Available at: https://www.businessdailyafrica.com/bd/corporate/technology/swvl-resumes-mass-transit-routes-in-nairobi-3316894.

Chadha, J., Shetty, O. and Shastry, S., 2020. *Understanding the Impact of Bus Aggregators on Urban Mobility in India's National Capital Region*. World Resources Institute, Washington, DC, and New Delhi. Available at: https://www.wri.org/research/understanding-impact-bus-aggregators-urban-mobility-indias-national-capital-region.

Deloitte, 2018. *Navigating the African Automotive Sector: Ethiopia, Kenya and Nigeria*. Navigating the African Automotive Sector: Ethiopia, Kenya and Nigeria. Johannesburg. Available at: https://www2.deloitte.com/za/en/pages/manufacturing/articles/navigating-the-african-automotive-sector--ethiopia--kenya-and-ni.html.

Deloitte, 2019. *Invest in Ethiopia: Structural Reforms Set to Unlock East Africa's Largest Economy*. Johannesburg. Available at: https://www2.deloitte.com/za/en/pages/deloitte-africa/articles/invest-in-ethiopia.html.

Haglund, N., Mladenović, M. N., Kujala, R., Weckström, C. and Saramäki, J., 2019. Where did Kutsuplus drive us? Ex post evaluation of on-demand micro-transit pilot in the Helsinki capital region. *Research in Transportation Business & Management*, 32. 100390. DOI:10.1016/j.rtbm.2019.100390.

Kost, C. and Aberra, G., 2022. *Digital Van Service for Addis Ababa: Understanding the Transport Landscape and the Potential for Digital Bus Aggregation in Ethiopia's Capital*. Technical Report 2.2 for the Addis Ababa Urban Age Task Force. Institute for Transportation & Development Policy, Nairobi and Addis Ababa. Available at: https://urbanage-taskforce.net/addisababa/.

Kostorz, N., Fraedrich, E. and Kagerbauer, M., 2021. Usage and user characteristics—insights from MOIA, Europe's largest ridepooling service. *Sustainability*, 13(2). 958. DOI:10.3390/su13020958.

Mishra, D., 2021. Chalo acquires office bus service Shuttl. *The Economic Times*, 26 October. Available at: https://economictimes.indiatimes.com/tech/startups/chalo-acquires-office-bus-service-shuttl/articleshow/87276011.cms.

MOIA, 2019. MOIA launches Europe's largest electric ridesharing service in Hamburg. *News Center*, 14 March. Available at: https://www.moia.io/en/news-center/moia-launches-europe-s-largest-electric-ridesharing-service-in-hamburg.

New Business Ethiopia, 2019. Ethiopia imports 135,457 vehicles in a year. Available at: https://newbusinessethiopia.com/trade/ethiopia-imports-135-457-vehicles-in-a-year/.

Rode, P., Mickleburgh, B., Chan, J. and Flynn, R., 2022. *Digital Van Service Demand: Gauging Interest in Mobility Alternatives among Current and Aspiring Car Owners in Addis Ababa*. Technical Report 2.1 for the Addis Ababa Urban Age Task Force. LSE Cities, London School of Economics and Political Science, London. Available at: https://urbanage-taskforce.net/addisababa/.

S.H, S., 2019. Essel Group-backed ZipGo said to have suspended services. *mint*, 23 April. Companies. Available at: https://www.livemint.com/companies/start-ups/essel-group-backed-app-based-bus-operator-zipgo-suspends-services-report-1556009892479.html.

Singh, M., 2021. India's Chalo acquires Amazon-backed bus aggregator Shuttl. *TechCrunch*. Available at: https://social.techcrunch.com/2021/10/26/chalo-acquires-amazon-backed-bus-aggregator-shuttl/.

UN DESA, 2018. *World Urbanization Prospects 2018*. United Nations Department of Economic and Social Affairs, Population Division, New York. Available at: http://esa.un.org/unpd/wup/.

World Bank, 2016. *Ethiopia – Transport Systems Improvement Project*. Project Appraisal Document PAD1293. World Bank Group, Washington, DC. Available at: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/490361467992052159/Ethiopia-Transport-Systems-Improvement-Project.

Zewdie, M., Worku, H. and Bantider, A., 2018. Temporal Dynamics of the Driving Factors of Urban Landscape Change of Addis Ababa During the Past Three Decades. *Environmental Management*, 61(1). 132–146. DOI:10.1007/s00267-017-0953-x.

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Technical Report 1.1 | *The Addis Ababa City Block: inclusion and livelihood though the horizontal-above-vertical concept*, by Elias Yitbarek Alemayehu

Technical Report 1.2 | *Finding Housing Affordability: cost estimates and affordability paths for the Addis Ababa City Block* by Jacus Pienaar

Technical Report 1.3 | *Sustainable Building Materials: exploring green construction options for new housing in Addis Ababa,* by Hannah Langmaack, Peter Scheibstock and Thomas Kraubitz (Buro Happold)

Theme 2 | Transport and Mobility Services

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Technical Report 2.1 | *Digital Van Service Demand: gauging interest in mobility alternatives among current and aspiring car owners in Addis Ababa,* by Philipp Rode, Bethany Mickleburgh, Jennifer Chan and Rebecca Flynn

Technical Report 2.2 | *Digital Van Service for Addis Ababa: understanding the transport landscape and the potential for digital bus aggregation in Ethiopia's capital,* by Chris Kost and Gashaw Aberra (Institute for Transportation and Development Policy (ITDP))

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Addis Ababa Plan Commission

Addis Ababa City Plan and Development Commission is committed and fully dedicated to preparing research-based city-wide short, medium and long term strategic development plans (both socio-economic and spatial) in order to transform the city to one among the middle-income cities in the world; create a liveable city for the citizen; and make Addis Ababa the best destination for investment in Africa. The commission is accountable to promote urban economy and jobs; deliver urban renewal and housing for citizens; improve urban environment and quality of life; and support policy decisions that will register accelerated, sustainable and equitable economic growth and a climate resilient green economy.

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